

# ORGANICS UPDATE

Even with increased efforts to divert organic materials, two-thirds (about 15 million tons) of collected organic materials are still destined for landfills—in fact, they make up 40 percent of what goes into landfills in California! Another 10 million tons of paper materials also are landfilled. These figures are likely to rise as population growth continues in California. To help reduce the amount of organic materials landfilled and to help stimulate markets, the Board's Organic Materials Management (OMM) programs are involved in many exciting programs and activities. The following are descriptions of projects we have been working on.

## ORGANICS INDUSTRY SURVEY

To better understand the State of California's compost and mulch industry, the California Integrated Waste Management Board (CIWMB) has recently completed an "infrastructure survey" of compost and mulch facilities. This survey is the first of its kind and contains valuable information on amounts and types of organic materials processed in California. The report will be available through the Board's publications unit in the very near future.

## ORGANICS REGULATIONS

Board staff and external stakeholders continue to work on updating the Compostable Organic Handling regulations and the Transfer Processing regulations that govern the use of putrescible organic materials. For more information on the status of these efforts, contact the Board's Permitting and Enforcement Division at (916) 341-6579.

## SUSTAINABLE LANDSCAPE MANAGEMENT ACTIVITIES

Leaves, grass, prunings, and yard trimmings make up more than 10 percent of the materials landfilled in California. Encouraging the adoption and use of resource-efficient landscaping practices has been, and still is, a major priority of the Board's Organic Materials Management Section. The Board is involved in several Landscape Management Outreach Programs (LMOP) to promote these practices. Following are examples of these outreach efforts:

The CIWMB has partnered with several local governments by funding programs designed to promote the use of resource efficient landscaping practices. Current and recent programs have included cooperative efforts with various jurisdictions such as the San Francisco Bay Area, Sacramento River Delta, Inland Empire, and Orange County.

The North Natomas project in Sacramento County is focusing on developing landscape design/water use guidelines for the new community under construction. The goals of this project will be accomplished by distributing educational materials to promote the use of environmentally beneficial landscape management practices. These include preventing stormwater pollution from toxic chemicals, preventing runoff and conserving water, and reducing the flow of green waste debris into the storm drain system. Staff will conduct outreach activities to new homeowners and professional landscapers working on publicly supervised landscape sites or commercial and residential properties in the North Natomas area of Sacramento.

Because Capitol Park in Sacramento is unique and highly visible, the CIWMB is funding a project to explore the use of resource-efficient landscaping practices at the park. The CIWMB has awarded a contract to assess current landscaping practices at Capitol Park, including irrigation, fertilization, pruning, pesticide usage, types of equipment used, and green material generation. The contract includes development of a landscaping guidelines manual and training for park staff.

## CIWMB ORGANICS INDUSTRY EFFORTS

The CIWMB and California Compost Quality Council (CCQC) have been working with Caltrans to clarify specifications for compost and mulch use for Caltrans projects. In May, a workshop in Los Angeles with CCQC focused on procurement of compost and mulch by the landscape industry. Efforts are also being directed at increasing procurement of urban-derived compost and mulch by California's other State agencies and local governments.

## FEED THE SOIL: COMMERCIAL GROWERS USE MUNICIPAL MULCH AND COMPOST

An increasing number of commercial growers are embracing municipal mulch and compost as organic materials that can be beneficial in their sustainable farming system. Use of these recycled products is an economically viable farming practice that supports the concepts of natural resource conservation and biodiversity. Growers are beginning to use municipal mulch and compost in conjunction with or in lieu of a cover crop.

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## **SUPPORTING DATA AND RESULTS FROM DEMONSTRATION PROJECTS**

To demonstrate the benefits of municipal mulch and compost, the CIWMB has sponsored several large-scale demonstration projects since 1994 with an increasing emphasis on agricultural and erosion control research.

### **Primary Focus on Agriculture:**

- University of California (U.C.) Davis research projects assessing the impact of compost on grape phylloxera (Mendocino) or synergetic effect with freshly-incorporated cover crop (Salinas) received funding in 2000.
- A soil impact assessment of various soil amendments including compost used on a variety of crops by Monterey growers (Pajaro River Watershed) received funding in 1999.
- U.C. Riverside avocado and citrus demonstration documenting avocado rot root suppression in a three-county area (southern California) received funding in 1997.
- Five demonstrations generally evaluating compost use in crop production (Fresno, Stanislaus, Tulare, San Jose, and Santa Cruz) received funding in 1994.
- A project with the California wholesale nursery industry helped develop guidelines for compost product specifications for nurseries.
- Work with the California Association of Nurserymen and California Cut Flower Commission included administering an industrywide survey on compost use,

barriers to use, and product specifications.

- Development of technical fact sheets for orchard growers cover issues/product characteristics that should be examined when considering when to use compost/mulch in orchard growing regimes.

### **Primary Focus on Erosion Control:**

Vineyard demonstrations using different types of application for municipal mulch (Napa-Sonoma and Napa-Lake) received funding in 1999. A watershed demonstration using municipal mulch in citrus (Ventura) received supplemental funding in 1998. U.C. Davis characterization study of compost and other products with a Caltrans roadside demonstration (Placer) received funding in 1997.

### **SAVE THE SOIL: EROSION CONTROL PROFESSIONALS USE MUNICIPAL MULCH AND COMPOST**

Municipal mulch and compost work effectively as biotechnical erosion control materials. The CIWMB has sponsored several projects that demonstrate the benefits of using municipal mulch and compost to prevent soil erosion in roadside or agricultural situations. The demonstration projects primarily involved regional partnerships between end-users, mulch and compost producers, U.C. Cooperative Extension, erosion-control specialists, and governmental agencies. The goal was to conduct research, field days, and workshops to demonstrate the practicality of using municipal mulch and compost to prevent soil erosion.

## **MORE INFORMATION ON CIWMB-FUNDED DEMONSTRATIONS**

All 13 of the agricultural or erosion-control project summaries, the project final reports including results of the completed demonstrations, and additional information of interest are available at [www.ciwmb.ca.gov/Organics/Farming/](http://www.ciwmb.ca.gov/Organics/Farming/). For more information on demonstrations using organic materials, please contact CIWMB staff at (916) 341-6583.

## **COMPOST AND BIOREMEDIATION**

Staff is currently developing an information clearinghouse and Web site on the use of compost and mulch in environmental remediation projects. Some avenues being explored include using compost as a remediation tool in wetland restoration, remediation of brownfields, riparian restoration, and using compost as biofilters for air and water management. CIWMB studies will also begin to examine how compost works as a filter to reduce odor in compost facilities.



## ORGANICS

### ON THE WORLD WIDE WEB

by Kevin Taylor

Disposal is the wrong option for valuable resources like organic materials. So what can we—the homeowners, business owners, school districts, and farmers do about all these wasted resources? Visit “Organics Outlook” at [www.ciwmb.ca.gov/Organics/](http://www.ciwmb.ca.gov/Organics/) to find the answers. The California Integrated Waste Management Board has created this site to provide information on topics relating to the management and use of organic resources.

#### What you'll find on the Web site:

- ✍ A list of compost and mulch producers and suppliers.
- ✍ Cost-efficient, labor-saving practices for landscaping businesses and homeowners.
- ✍ Grasscycling what it is and how you can make it work for you.
- ✍ How to compost in the office, home, classroom, and on the farm.
- ✍ Food scrap management for food industries.
- ✍ Information on biomass and conversion technologies.
- ✍ A searchable recycled-content product database.
- ✍ Composting with WORMS! Including building compost and worm bins.

By visiting our Web site, you can learn how to benefit from using and managing organic materials in your area. So whether you own a business or farm, work for a school or local government agency, or just want to be more efficient and environmentally helpful at home, visit “Organics Outlook”—the site that provides easy access to resources and information on recycling organic.



**Remember:  
If you are not  
buying recycled,  
you are not  
recycling!**

### REGIONAL FOOD SCRAP DIVERSION WORKSHOPS

The Organic Materials Management staff of the California Integrated Waste Management Board—in cooperation with the Office of Local Assistance and local government representatives—has been conducting a series of regional food scrap diversion workshops for local government, with very favorable responses. Attendees learn decision-making tools and best management practices for handling food scraps and the potential for further development of the existing regional food management infrastructure. Presenters and attendees at these workshops include representatives from local government, food banks, prepared food redistribution programs, animal feed programs, renderers, compost and vermicompost programs, waste haulers, health and safety programs, and generators of food waste. Workshops have been held for Monterey, Santa Cruz, San Benito, Humboldt, Del Norte, Trinity, and Mendocino Counties. Three more workshops are scheduled to take place in 2001:

Serving Ventura and Santa Barbara Counties:

Date: June 28, 2001

Time: 8:30–4:30 pm

Location: Civic Arts Plaza, City of Thousand Oaks

Serving Santa Clara, San Mateo and San Francisco Counties:

Date: August 8, 2001

Time: 8:30–4:30 pm

Location: San Jose State University

Serving Alameda and Contra Costa Counties:

Date, Time and Location to be announced

For more information on these regional workshops, please contact Terry Brennan of the CIWMB's Organic Materials Management Section at (916) 341-6578 or by e-mail at [tbrennan@ciwmb.ca.gov](mailto:tbrennan@ciwmb.ca.gov).

# ORGANICS

by Yvette DiCarlo, Integrated Waste Management Specialist

## ANOTHER LINK IN THE FOOD CHAIN

When it comes to managing food and leftover food scraps as a waste commodity, the reduce-reuse-recycle policy should apply. A new Food Scrap Management Web site dedicated to managing food scraps is now available at [www.ciwmb.ca.gov/FoodWaste/](http://www.ciwmb.ca.gov/FoodWaste/). Featured topics include prevention of food waste, donation of leftovers to food banks and rescue programs, composting information, and other resources and links.

This site addresses common questions such as:

- ☐ Am I liable if someone gets sick from food I've donated?
- ☐ Where can I compost my food scraps?
- ☐ Do I need a permit to compost food scraps?
- ☐ How can I set up a compost system for special events?
- ☐ Where can I buy biodegradable kitchenware and collection bags?
- ☐ Who discards the most food waste in California?

### FEED PEOPLE, NOT LANDFILLS—DONATE LEFTOVER FOOD

Food generators such as restaurants, grocers, bakeries, and cafeterias make more food than they can sell on a given day. Our Web site educates food generators about the benefits and legal protection offered to donors of perishable and non-perishable foods. The site links to Second Harvest, the nation's largest network of food banks, which has nearly 200 affiliate food banks in California. Food rescue programs

that handle perishable hot and cold foods, such as leftover food from cafeterias, delicatessens, and catered events are also listed. Not only do food donations help people in need, they help reduce the cost and volume of garbage collection.

### THINK BEFORE YOU THROW

Many food scraps are not appropriate for donation; for example, lettuce trimmings, onion culls, stale bakery items, and plate scrapings. However, these scraps don't belong in the trash. Composting inedible food scraps on site or at a regional compost facility is a responsible and economical choice for food generators in addition to other waste reduction opportunities. Resources on the Web site include lists of permitted composting facilities that accept food scraps, manufacturers of small- to mid-sized compost systems for on-site composting, sources of biodegradable kitchenware, and considerations for composting at special events, among others. This site also explains how composting food scraps is different than composting green materials like yard trimmings and leaves.

## CASE STUDIES

### RESIDENTIAL/COMMERCIAL FOOD COLLECTION

The **City of San Francisco** began collecting source-separated food scraps in 1996. The city now sends about 60 tons daily of residential and commercial food scraps to a regional compost facility. Residents that participate in this program use three curbside bins—one each for recyclables, food scraps, and trash.

To encourage food scrap composting, the **City of San Jose** provided a financial incentive to collect and process food scraps through grants. Funding was

awarded to two local compost facilities that now use large-scale, in-vessel compost systems.

The **City of Modesto** recently announced its new residential food scrap collection program that allows food scraps to be mixed with residents' green materials in the same container. Several cities in **Solano County** now allow food scraps to be comingled with green material.

### CAMPUS FOOD COLLECTION

Vermicomposting, also known as worm composting, is the method **Berkeley Worms** uses to compost food scraps from the UC Berkeley's dining commons, cooperative housing, and campus organizations. Through an initial grant from **Alameda County**, the campus organization has retrofitted a collection truck that grinds food to a small particle size for the worms.

### SPECIAL EVENTS

Food diversion at the annual **U.C. Davis Whole Earth Festival** is a model for minimizing festival waste. Last year's event produced nearly 8,000 pounds of compostable materials for composting at the campus farm. Food vendors use biodegradable utensils, cups, and plates. Organic residuals mixed with straw and manure went into the compost at the end of the festival.

Last year, the **San Francisco Moscone Center Fancy Food Trade Show** diverted 25 tons of fresh and packaged food to two local food donation banks. Thousands of food business buyers attend the show to see and taste 50,000 different fine and specialty products. Foods such as wrapped candies, cheeses, and olives are delivered to homeless shelters, transitional housing, seniors, and other nonprofit warehouses in the Bay Area. Moscone Center donates nearly 75 tons of food from events annually.

# ORGANICS - FOOD SCRAP DIVERSION

by Chris Kinsella, Integrated Waste Management Specialist

## Food Scrap Diversion Contracts

In June 2000, the Board awarded \$150,000 to help cities and counties target food scrap waste reduction. The awards went to the five most qualified bidders and are funding one-year food diversion projects.

Now in the final quarter of the contract year, all contract managers can agree that food scrap diversion is challenging. With the concept of food scrap diversion still in its infancy, programs such as these require extensive planning and "buy in" from all participants. Just as with the recycling of bottles and cans many years ago, the perception of recycling food waste is often met with skepticism.

We hope in the near future people will look for the special recycling container labeled "Food Scraps" to drop their scraps into, just as we now look for recycling containers for bottles and cans.

**Davis Joint Unified School District** established composting and vermicomposting systems at three K-6 elementary school sites. Each site includes food rescue efforts and a switch to an "Offer Versus Serve" food service plan. For more information on this project, e-mail Cynthia Havstad, Project Manager, Davis Joint Unified School District, at [cmhavstad@usdavis.edu](mailto:cmhavstad@usdavis.edu).

**City of Indian Wells and the Indian Wells Tennis Gardens** collected food scraps at four large public events including two tennis tournaments and two

concerts. The city and the consultant held extensive training sessions for the food handling staff at these events. The events also included a press conference informing the public about the food scrap collection process.

At the first concert, 789 pounds of collected food scraps went to the California Biomass facility for recycling into compost. An additional 100 pounds of unserved food went to a community food bank. For more information on this project, e-mail Troy Butzlaff, Assistant City Manager, City of Indian Wells, at [butzlaff@ci.indian-wells.ca.us](mailto:butzlaff@ci.indian-wells.ca.us).

**San Francisco Recycling Program** organized the collection of food scraps from four elementary schools and one high school. Cafeteria lunch waste is separated into four different containers: recyclables, liquids, food scraps for composting, and garbage. The organic waste is taken off site to the B and J landfill. For more information on this project, e-mail Natasha Stillman, School Education Coordinator, City of San Francisco, at [Natasha\\_Stillman@ci.sf.ca.us](mailto:Natasha_Stillman@ci.sf.ca.us).

**Santa Cruz County** installed two "Earth Tubs" (small-scale, in-vessel, completely enclosed composting units) at the California Grey Bears facility. The Grey Bears provide "Brown Bags" of recovered food to low-income elderly people in Santa Cruz County.

The Grey Bears filled the first tub with food discards from their annual holiday dinner. Paper cups and biodegradable utensils went into the composting tubs, as well as the necessary sawdust for a bulking agent. The first tub contained 2,968 pounds of food scraps! When workers emptied the first tub, they determined that the composted material was best used as a mulch. For more information on this project, e-mail Karen Grobe, Consultant from Organic Recyclers Anonymous, at [KarinGrobe@earthlink.net](mailto:KarinGrobe@earthlink.net).

**West Contra Costa Integrated Waste Management Authority and Perez Elementary School in Richmond** coordinated to collect food scraps and separate recyclables from the cafeteria. Biodegradable utensils, napkins, milk cartons, and paper juice pouches are all accepted into the food waste collection bins and then transported to the local landfill. The school also donates leftover unopened food to community members on a regular basis. For more information on this project, e-mail Nicole Angiel, Waste Prevention Programs Manager, West Contra Costa Integrated Waste Management Authority, at [nicolea@recyclemore.com](mailto:nicolea@recyclemore.com).

For additional information and updates on these five projects, or to learn more about managing food waste, contact Chris Kinsella at (916) 341-6274 and visit the Board's food waste management Web page at [www.ciwmb.ca.gov/FoodWaste/](http://www.ciwmb.ca.gov/FoodWaste/)



# ORGANICS - WORMS AND WASTE MANAGEMENT

by Terry Brennan, Integrated Waste Management Specialist

Californians generate nearly 60 million tons of waste each year, with organic materials making up more than half of garbage disposed. To meet the State's waste reduction goals, we must recover and process large quantities of organic waste. This is possible through conventional composting operations, fuel production, and in some cases vermicomposting, or composting with the assistance of earthworms. Presently, however, worms have a small role in California's waste management programs.

Californians have raised worms for decades. Different varieties of worms serve many different purposes. Traditionally worms have been raised for fishing bait as well as to provide a protein source for various products, including animal food and cosmetics. One species of earthworms, commonly known as red wigglers (*Eisenia foetida*), has also been used to manage agricultural wastes such as dairy manure. The worms convert waste into a nutrient-rich soil product called "castings."

Farming worms as a product is considered vermiculture. Using worms to create a soil amendment is considered vermicomposting. Vermiculture and vermicomposting are currently defined as agricultural activities. According to the California Department of Food and Agriculture, worms can be considered livestock, similar to cows in a ranching or dairy operation. Within reason, certain organic wastes can become feed.

Under new California solid waste laws, vermicomposting is considered "excluded" from regulation as a conventional composting facility. Composting

facilities are included under solid waste. However, an "exclusion" recognizes that a given activity is involved in solid waste handling and therefore must comply with fundamental health and safety codes. If a worm operation becomes a nuisance, for instance by taking in more waste than the worms can effectively process, the activity may qualify as solid waste management. Concerns about a particular circumstance should be directed to community's environmental health department.

Some entrepreneurs are using certain types of worms to process municipal organic waste into soil products. The products of these operations—the worm castings—fill niche markets within the soil amendment industry.

The CIWMB has encouraged residents to help prevent waste and manage their own organic discards by composting at home, including using worm boxes for food residue. This simple system can provide a rich soil amendment while reducing waste at the point of generation, thus reducing collection and management costs. The CIWMB also recognizes that worms may be playing some role in creating higher end soil products along with conventional composting methods.

Most organic waste is not in a form that can readily be fed to worms. Most vegetable waste—along with many other soft, readily petrucible organic materials—are easily consumed by worms. Since worms have no teeth, they must wait for harder organic materials to begin to decay before they can consume them. Sometimes these materials are processed or composted into a form suitable to be used as worm food.

Worm research shows that the reproductive capacity of some worms is substantial if provided ideal conditions. Some worm types used for composting may be able to reproduce up to six times a year. Using a simple doubling of worm populations every two months, worm farmers could quickly saturate the market to accommodate market demand.

Individuals interested in pursuing more information on large-scale vermicomposting or vermiculture, as well as on worm and soil markets, can contact an existing worm farm, soil blender, or organic waste processor to discuss the present and future possibilities of worm enterprises. The CIWMB maintains an informal list of worm suppliers at [www.ciwmb.ca.gov/Organics/Worms/WrmSupply.htm](http://www.ciwmb.ca.gov/Organics/Worms/WrmSupply.htm).

For information on vermicomposting at home, see [www.ciwmb.ca.gov/Organics/Worms/](http://www.ciwmb.ca.gov/Organics/Worms/) or contact the CIWMB Organic Materials Management Section at (916) 341-6620.



## Conversion Technologies— A New Paradigm?

Visualize millions of tons of non-compostable yard trimmings and wood. Then think about low-value paper and plastic residuals from material recovery facilities for which there is no recycling demand. Finally, look at agricultural residues left in fields where burning is outlawed.

Now imagine a future where technologies that use thermal, chemical, and biological methods to convert materials into high-value products such as energy, ethanol and other fuels, and citric acid and other industrial products. These conversion technologies, such as hydrolysis, gasification, and anaerobic digestion, could change the way materials normally destined for landfilling are managed.

In pursuit of its mission to foster solid waste prevention, reuse, and recycling, the CIWMB has made a concerted effort to target large components of the waste stream. Because organic materials make up a high percentage of waste disposed—35 to 45 percent in 1999, or about 15 million tons—they are a high priority. (By comparison, paper consisted of 30 percent, woody construction debris 5 percent, and plastics 9 percent.)

Responding to the rapid growth of composting and other management techniques in the last 10 years, the CIWMB has focused on preventing on-site generation and on developing markets for compost and mulch.

### CONVERSION TECHNOLOGY FORUM

Conversion technologies were the subject of a forum held on May 3–4, 2001 in Sacramento, California.

The objectives of the forum were to:

- 1) Build a shared understanding of issues, concerns, and interests regarding conversion technologies and related laws and policies.
- 2) Gather input from a wide range of stakeholders and interest groups on opportunities, barriers, and possible solutions.
- 3) Develop recommendations for presentation to the Board for further discussion and consideration.

Approximately 130 representatives from technology companies, solid waste management companies, environmental groups, financing entities, local jurisdictions, and State and federal government agencies attended the forum to discuss barriers to and solutions for conversion technologies. Opening speakers discussed national and State trends in the development of alternative energy technologies and the potential applicability of conversion technologies in managing residual materials otherwise destined for landfills.

### NEXT STEPS

CIWMB staff presented recommendations to the Board at its May 22–23 meeting. The recommendations were designed to address the major barriers identified at the forum. The Board directed staff to:

1. Work on establishing a formal interagency commission and external advisory group on conversion technologies.
2. Begin planning public education workshop and symposia.
3. Seek General Fund support for a grant program for small-scale demonstration projects.
4. Ascertain existing funding availability for conversion technology projects.
5. Establish a streamlined permitting process to assist project applicants.

For additional details regarding the conversion technologies and implementation of the recommendations, call Fernando Berton at (916) 341-6592 or Howard Levenson at (916) 341-6583.

### MAJOR BARRIERS

The major barriers identified by participants at the forum were:

1. Lack of cohesive political leadership and support.
2. Statutory constraints.
3. Regulatory constraints.
4. Lack of funding.
5. Economics and markets.
6. Public perception and understanding.
7. Lack of data.
8. Feedstock access.



# ORGANICS - MATERIAL MANAGEMENT

## ORGANICS MATERIAL MANAGEMENT I

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Diversion  
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## ORGANICS MATERIAL MANAGEMENT II

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